

WHAT IS CLAIMED IS:

1. A composition to improve bioenergy metabolism of cells comprising two or more chemical substances of Krebs cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors thereof.

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2. The composition according to claim 1, wherein the chemical substances of Krebs cycle are selected from the group consisting of succinate, fumarate, L-malate, and α -ketoglutarate.

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3. The composition according to claim 1, wherein the chemical substances of Krebs cycle are selected from the group consisting of citrate, cis-aconitate, isocitrate, oxalsuccinate, α -ketoglutarate, succinyl-coenzyme A, succinate, fumarate, L-malate, oxalacetate, acetyl-coenzyme A and pyruvate.

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4. A composition to improve bioenergy metabolism of cells comprising two or more chemical substances of respiratory chain cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors thereof.

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5. The composition according to claim 4, wherein the chemical substances of respiratory chain cycle are selected from the group consisting of ubiquinone, ubiquinol, heme a, heme b and heme c.

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6. A composition to improve bioenergy metabolism of cells comprising two or more chemical substances of urea cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors.

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7. The composition according to claim 6, wherein the chemical substances of urea cycle are selected from the group consisting of citrulline, argininosuccinate, arginine, ornithine and aspartate.

8. A composition of any one of claims 1-7, further comprising one or two of

biochemical compounds selected from the group consisting of lipoic Acid, lipoamide, acetyl-lipoamide, lysine, carnitine, ascorbate, thiamine, riboflavin, nicotinic acid, niacinamide, pantothenate, nicotinamide-adenine dinucleotide, reduced nicotinamide adenine dinucleotide, nicotinamide-adenine dinucleotide phosphate, reduced nicotinamide adenine dinucleotide, quinolinate, flavin-adenine dinucleotide, reduced flavin-adenine dinucleotide, flavin mononucleotide, reduced flavin mononucleotide, adenosine diphosphate, adenosine triphosphate, guanosine diphosphate, guanosine triphosphate, magnesium ion, calcium ion, manganese ion, copper iron-sulfate and molybdenum.

9. The composition according to any one of claims 1-7, wherein the composition is provided to a human subject in the form of tablets, pills, injections, infusions, inhalations, suppositories or other pharmaceutically acceptable carriers and/or means of delivery.
10. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises two or more chemical substances of Krebs cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors thereof.
11. The method according to claim 10, wherein the chemical substances of Krebs cycle are selected from the group consisting of succinate, fumarate, L-malate, and α -ketoglutarate.
12. The method according to claim 10, wherein the chemical substances of Krebs cycle are selected from the group consisting of citrate, cis-aconitate, isocitrate, oxalsuccinate, α -ketoglutarate, succinyl-coenzyme A, succinate, fumarate, L-malate, oxalacetate, acetyl-coenzyme A and pyruvate.
13. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises two or more

chemical substances of respiratory chain cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors thereof.

- 5 14. The method according to claim 13, wherein the chemical substances of respiratory chain cycle are selected from the group consisting of ubiquinone, ubiquinol, heme a, heme b and heme c.
- 10 15. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises two or more chemical substances of urea cycle, wherein the chemical substances are intermediates of the cycle and/or precursors and cofactors.
- 15 16. The method according to claim 15, wherein the chemical substances of urea cycle are selected from the group consisting of citrulline, argininosuccinate, arginine, ornithine and aspartate.

17. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Succinate	0.01-100 mg
Fumarate	0.01-100 mg
L-Malate	0.01-100 mg
α -Ketoglutarate	0.01-100 mg

18. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Pyruvate	0.01-100 mg
Acetyl-Coenzyme A	0.01-100 mg
Citrate	0.01-100 mg

Cis-Aconitate	0.01-100 mg
Isocitrate	0.01-100 mg
Oxalsuccinate	0.01-100 mg
2-Oxo-Glutarate	0.01-100 mg
Succinyl-CoenzymeA	0.01-100 mg
Oxaloacetate	0.01-100 mg

19. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Coenzyme Q-10 (Ubiquinone)	0.01-20 mg
Ubihydroquinone (Ubiquinol)	0.01-20 mg
Heme a (Part of Cytochrome a)	0.01-20 mg
Heme b (Part of Cytochrome b)	0.01-20 mg
Heme c (Part of Cytochrome c)	0.01-20 mg

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20. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Citrulline	0.01-100 mg
Argininosuccinate	0.01-100 mg
Arginine	0.01-100 mg
Ornithine	0.01-100 mg
Aspartate	0.01-100 mg

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21. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Lipoic Acid	0.01-100 mg

Lipoamide (Lipoic Acid + Lysine)	0.01-100 mg
Acetyl-Lipoamide	0.01-100 mg
Lysine	0.01-100 mg
Carnitine	0.01-100 mg
Ascorbate	0.01-200 mg
Thiamine	0.01-10 mg
Riboflavin	0.01-10 mg
Nicotinic Acid	0.01-10 mg
Niacinamide	0.01-10 mg
Pantothenate	0.01-10 mg
Nicotinamide-Adenine Dinucleotide (NAD)	0.01-10 mg
Reduced Nicotinamide Adenine Dinucleotide (NADH)	0.01-10 mg
Nicotinamide-Adenine Dinucleotide Phosphate (NADP)	0.01-10 mg
Reduced NADP (NADPH)	0.01-10 mg
Quinolate (NAD/NADP precursor)	0.01-10 mg
Flavin-Adenine Dinucleotide (FAD)	0.01-10 mg
Reduced Flavin-Adenine Dinucleotide (FADH)	0.01-10 mg
Flavin Mononucleotide (FMN)	0.01-10 mg
Reduced Flavin Mononucleotide (FMNH ₂)	0.01-10 mg
Adenosine Diphosphate (ADP)	0.01-10 mg
Adenosine, Triphosphate (ATP)	0.01-10 mg
Guanosine Diphosphate (GDP)	0.01-10 mg
Guanosine Triphosphate (GTP)	0.01-10 mg
Magnesium (Mg ⁺⁺)	0.01-10 mg
Calcium (Ca ⁺⁺)	0.01-10 mg
Manganese (Mn ⁺⁺)	0.01-10 mg
Copper	0.01-10 mg
Iron-Sulfate	0.01-10 mg
Molybdenum	0.01-10 mg

22. A method for improving bioenergy metabolism of cells, comprising the step of administering to a human a composition which comprises:

Biochemical Substances	Amount/Day
Succinate	100 mg
Fumarate	100 mg
L-Malate	100 mg
A-Ketoglutarate	100 mg
Pyruvate	100 mg
Acetyl-CoA	100 mg
Citrate	200 mg
Cis-Aconitate	100 mg
Isocitrate	100 mg
Oxalsuccinate	100 mg
2-Oxo-Glutarate	100 mg
Succinyl-Coenzyme A	100 mg
Coenzyme Q-10 (Ubiquinone)	20 mg
Ubihydroquinone (Ubiquinol)	20 mg
Arginine	100 mg
Carnitine	100 mg
Lysine	100 mg
Ascorbate	200 mg
Thiamine	10 mg
Riboflavin	10 mg
Nicotinic Acid	10 mg